



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,090	11/13/2003	Junji Sugamoto	02887.0259	7292
22852	7590	09/22/2005	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			LEE, GRANVILL D	
			ART UNIT	PAPER NUMBER
			2891	

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,090

Applicant(s)

SUGAMOTO ET AL. 

Examiner

Granvill D. Lee Jr

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 and 8-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 and 32-34 is/are allowed.
- 6) ☒ Claim(s) 8-13, 15, 22-27, 29 and 31 is/are rejected.
- 7) ☒ Claim(s) 14, 16-21, 28 and 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Finality Withdrawn

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn and applicant's arguments made moot thereafter.

Claim Objections

Claims 9 and 26 are objected to because of the following informalities: The applicant is using phases "without cleavage" and "without being cleaved" to actually mean "dice". If this is true, the record should be clear that this is what is intended in the invention. Explanation is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 26, 27 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Younan (Article V).

As much as can be determined, in regarding claim 26, Younan discloses an in-test fabrication process where an apparatus is used wherein (Abstr.);

a first device to remove with a chemical solution a film of a semiconductor wafer which may have a crystal defect, so as to expose a crystal surface of the semiconductor wafer: said film constituting a capacitor device structure including a device pattern (Sect. II); and

a second device to selectively remove a surface layer of the semiconductor wafer by selective etching to bring the crystal defect into view. Note; the second device may mean any additional test structure (ie. valve), test component (etchant) or test gas.

In view of claim 27, Younan (Art. V) uses a third etch step for 5 minutes (Pg. 188 col. 2, 3rd para.).

In view of claim 29 Younan (Art. V) uses two inspection steps using an optical inspection followed by a SEM inspection (Sect. III and fig. 2-4).

Claims 8-13, 15 and 22-25 are rejected under 35 U.S.C. 102(e) as being anticipated over Younan (Article U).

In view of these claims, Younan treats a semiconductor wafer comprising, treating the semiconductor wafer (Abstr.) in a second solution called Wright etch, which includes at least one kind of an oxidative acid (HF)

Art Unit: 2891

and an alkali agent (HNO₃), and treating the semiconductor wafer in a first solution including at least one of HF and NH₄F for 15 minutes (intro.). In view of claim 8, Younan discusses treating the wafer in a first solution of 49% HF, followed by an acid and HF solution (pg. 21 col. 1 last para.-col. 2 third para.). Note; no solution is exactly 49% Hf, and may include a solution with a little more (49.005%) or a "little less" (48.995%) HF.

In view of claims 9 and 23, Younan shows method of inspecting a semiconductor wafer which comprises a film constituting a device structure including a device pattern and which may have a crystal defect, the method comprising, removing said film with a chemical solution to expose the crystal surface of the semiconductor wafer, selectively removing a surface layer or the semiconductor wafer by selective etching to bring the crystal defect into view; and quantitatively evaluating the crystal defect (Abstr.). Younan further integrates the process and determines the causes of low-yielding manufacturing processes (pg. 22 col. 2 para. 2-5).

In view of claims 10-11 and 24, Younan further shows a chemical solution including a second solution having at least one kind of an oxidative acid and an oxidizing agent and a first solution having at least one of HF (pg. 20 Col. 2 para. 1-3).

In view of claims 12-13, 22 and 25, Younan continues with a process to reduce the residues with an agitated solution of the Wright etch solution, (pg. 21 col. 2 last para) this must be done so as to proper analysis by SEM.

Art Unit: 2891

In view of claim 15, Younan uses a Wright etch solution of an oxidative hydrofluoric acid and a potassium dichromate oxidizing agent (pg. 20 col. 2 para. 1-3).

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Younan (Art. V) in view of Younan (Art. U).

In view of this claim, Younan (Art. V) shows method of inspecting a semiconductor wafer which comprises a film constituting a device structure including a device pattern and which may have a crystal defect, the method comprising, removing said film with a chemical solution to expose the crystal surface of the semiconductor wafer, selectively removing a surface layer or the semiconductor wafer by selective etching to bring the crystal defect into view, but fails to an ultrasonic wave generator to apply to the semiconductor. But, Younan (Art. U) continues with a process to reduce the residues with an agitated solution of the Wright etch (pg. 21 col. 2 last para).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the Wright etch method of Younan (Art. V) to the agitated method of Younan (Art. U) In order achieve a cleaner sample, since it was desirable that bubbles or other by products should not remain on the surface (pg. 21 last para.- pg. 22 1st para.).

Response to Applicant Arguments

The objection cited has been replaced by another objection that is believed to be better to address the "cleave" issue.

In regarding claims 9 and 14, have been rejected and/or objected to herein.

On page 4 and 5, applicant suggests that claims 26 and 8-13,15 and 22-25, respectively, were improper, to which the examiner agrees, hence the new rejection, making moot those arguments.

Allowable Subject Matter

Claims 6, and 32-34 are allowable, based on 1st-3rd solutions.

Claims 14, 16-21, 28 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications for the examiner should be directed to Granvill Lee whose telephone number is (571) 272-1897. The examiner can be normally reached on Monday thru Friday from 6:00 am to 2:30 pm.

If attempts to reach the examiner by telephone are not successful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272-


Art Unit: 2891

1722. The fax phone number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner
Granvill Lee
Art Unit 2891

GI
9/15/05



B. WILLIAM BAUMEISTER
SUPERVISORY PATENT EXAMINER